

Remarks/Arguments:

Claim Status:

Claims 1 - 10 are pending in the present case.

Claim Rejections Under 35 U.S.C. § 103(a):

- Claims 1, 2, 5, 7-10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Hattori et al. (U.S. Patent No. 6,334,413) in view of Stupak, Jr. (U.S. Patent 6,542,348). Applicants respectfully traverse the rejection of these claims and respectfully submit that these claims are patentable over Hattori et al. and Stupak, Jr. for the reasons set forth below.

Applicants respectfully submit that there is a lack of motivation to combine the Hattori et al. and Stupak references. It is well settled that the motivation to combine references must come from the prior art or from the knowledge of one of ordinary skill in the art. This motivation, however, can not be based solely on Applicants disclosure.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure.* (emphasis added)¹

Applicants respectfully submit that this rejection is improper because the only suggestion to combine the references impermissibly comes from Applicants own disclosure.

Briefly, Hattori et al. describe an electromagnetic actuating system for actuating a valve member, which was described in the previous Amendment. In sharp contrast, Stupak describes a method of magnetizing magnetically hard materials (see Column 1, Lines 13-20). There is no disclosure in Stupak that the techniques described therein may be applied to any actuator. Applicants contend that neither the teaching of Stupak nor the knowledge of the skilled person provide a suggestion or motivation to modify the teachings of Hattori et al. to yield "an

¹ MPEP §706.02(j)

adjustable controlling means for valve control and seating control" (Page 3, Office Action Dated 12/16/2005).

Stupak discloses a fixture 10 comprising a conductor wound in a cylindrical coil 12 having a hole 11 for receiving a magnetically hard article that is to be magnetized, as illustrated in Figures 2A and 2B. A driving circuit connected to the manufacturing fixture sequentially produces: (1) a first current that linearly increases over time, (2) a second current that is substantially constant over time, and (3) a third current that linearly decreases over time for magnetizing magnetically hard materials.

In the background section, Stupak describes two common problems which plague magnetizing fixtures. First, magnetizing fixtures comprise coils of an electrical conductor having windings that are separated by an insulator. The insulator has a breakdown voltage which, if exceeded, will damage the insulator and prevent proper operation of the magnetizing fixture. This phenomena limits the rate at which the current in the conductor may change, since the voltage on the conductor is proportional to the rate of change of current through the conductor. Second, when current passes through a conductor, the resistance of the conductor results in an energy loss, which produces heat. The energy that is converted to heat represents energy that cannot be used for magnetization and has the potential to damage the insulator. To reduce heating of the fixture, Stupak teaches that it is desirable to keep the current pulse through the conductor of the fixture as short as possible. These features are a result of the high currents (~100 A) required for the magnetization process. (See col. 2, line 26). Stupak overcomes these two problems by increasing and decreasing the current produced by the magnetizing pulse linearly with time to keep the voltage on the conductor of the magnetizing fixture below the insulation breakdown voltage and to keep the magnetization current pulse as short as possible (see Column 1, Lines 55-60). In conclusion, Stupak describes a method of permanently magnetizing a magnetic material using a specialized manufacturing fixture, which bears no relation to the operation of an electromechanical valve actuator.

There is no suggestion or motivation in Stupak to alternate an attracting current to manipulate the motion of a mobile plate relative to an electromagnet. In the Office Action, however, it is asserted that "Stupak, Jr. teaches a method for **driving** magnetic devices to include electric motors and linear actuators (Column 1, Lines 13-15) ... It would have been obvious to have utilized the teaching by Stupak, Jr. in the apparatus of Hattori et al." (Page 3). Applicants respectfully disagree with this assertion and submit that Stupak merely teaches a

method of **fabricating** magnetic devices used with electric motors. As recited in Stupak, "permanent magnets of the type **used** in electric motors, linear actuators and the like are **created by** magnetizing magnetically hard materials" (Column 1, Lines 13-15). Applicants submit that if the references were to be combined, Stupak may teach a method of **fabricating** the permanent magnets of Hattori's actuating system, but would not motivate the skilled person to produce the subject invention.

Furthermore, Stupak teaches that during a first period of time, the magnetizing current increases linearly to a peak value of at least 100 Amperes and then, for a second period of time, the current decreases substantially linear with time (see Column 2, Lines 31-36). However, a person skilled in the art would know that the intensity of a current in an electromechanical valve generally involve currents of this magnitude (see Applicants Figures 3b, 4b, 5b, 6b). Accordingly, the techniques used by Stupak to avoid breakdown of the insulation in the magnetization apparatus would not be needed in the subject invention. Stupak also teaches that the sum of the first and second periods of time is less than 0.1s (see Column 2, Lines 38-39). However, a person skilled in art would know that the switching time of a valve is much shorter than this time. (see Applicants Figures 4b, 5b, 6b; time measured in milliseconds as described on Page 6). Thus, it is not obvious that a person skilled in the art would have combined the teaching of Stupak with the teaching of Hattori to yield Applicants' invention.

In re Rouffet, for example, the Federal Circuit held that **even** where the combination of references taught every element of the claimed invention (not necessarily the case here), without a motivation to combine, a rejection based on a prima facie case of obviousness was improper (47 USPQ2d 1453, 1457-58 (Fed. Cir. 1998)).

Prima facie obviousness cannot be established based on the cited references because there is no motivation to combine the references. Accordingly, for the foregoing reasons, Applicants respectfully submit that independent claims 1 and 10 are patentable over Hattori et al. and Stupak and should be allowed. Claims 2, 5 and 7-9 are dependent upon claim 1, and therefore should also be allowed at least as dependent upon an allowable base claim. Reconsideration of claims 1, 2, 5, 7-10 is respectfully requested.

- Claims 3 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable by Hattori et al. (U.S. Patent No. 6,334,413) in view of Stupak, Jr. (U.S. Patent 6,542,348) and further in view of Curtis et al. (U.S. Patent 6,532,919). Applicants respectfully traverse the rejection of

these claims and respectfully submit that these claims are patentable over Hattori et al., Stupak and Curtis et al. for the reasons set forth below.

For the same reason there is no motivation or suggestion to combine the Hattori and Stupak references, there is no motivation or suggestion to combine the Hattori, Stupak and Curtis references. Hattori and Curtis both describe the operation of a valve actuator, whereas Stupak describes a method of magnetizing magnetically hard materials. Moreover, claims 3 and 4 should be allowable as dependent upon allowable independent claim 1. Accordingly, for the foregoing reasons, Applicants respectfully submit that claims 3 and 4 are patentable over Hattori et al., Stupak and Curtis and should be allowed.

- Claim 6 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Hattori et al. (U.S. Patent No. 6,334,413) in view of Stupak, Jr. (U.S. Patent 6,542,348) and further in view of Kawamura (U.S. Patent 5,111,779). Applicants respectfully traverse the rejection of these claims and respectfully submit that these claims are patentable over Hattori et al., Stupak and Kawamura for the reasons set forth below.

For the same reason there is no motivation or suggestion to combine the Hattori and Stupak references, there is no motivation or suggestion to combine the Hattori, Stupak and Kawamura references. Hattori and Kawamura both describe the operation of a valve actuator, whereas Stupak describes a method of magnetizing magnetically hard materials. Moreover, claim 6 should be allowable at least as dependent upon allowable independent claim 1. Accordingly, for the foregoing reasons, Applicants respectfully submit that claim 6 is patentable over Hattori et al., Stupak and Kawamura and should be allowed.

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GRY-118US

Conclusion:

In view of the remarks set forth above, Applicants respectfully submit that this application is in condition for allowance, which action is respectfully requested.

Respectfully submitted,



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